

CLAIMS

1. A method for producing expandable beads of a styrene-modified linear low-density polyethylene-based resin comprising, in the order recited, the steps of:
 - 5 dispersing 100 parts by weight of non-crosslinked linear low-density polyethylene-based resin beads, 50 to 1000 parts by weight of a styrene-based monomer, and 0.1 to 0.9 parts by weight of a polymerization initiator relative to 100 parts by weight of the styrene-based monomer into a
 - 10 suspension containing a dispersant;
impregnating the styrene-based monomer into the low-density polyethylene-based resin beads by heating a resultant dispersion at such a temperature that polymerization of the styrene-based monomer does not substantially take
 - 15 place;
performing polymerization of the styrene-based monomer at a temperature of $(T-15)$ to $(T-8)$ °C or $(T+1)$ to $(T+5)$ °C (where T °C is a melting point of the low-density polyethylene-based resin beads); and
 - 20 impregnating a volatile blowing agent into the resin beads during or after the polymerization,
whereby resin components of the expandable beads contain a gel component comprising less than 2 wt% of a graft polymer.
- 25 2. A method for producing expandable beads of a

styrene-modified linear low-density polyethylene-based resin according to Claim 1, wherein the amount of the styrene-based monomer is 50 to 300 parts by weight.

3. A method for producing expandable beads of a
5 styrene-modified linear low-density polyethylene-based resin comprising, in the order recited, the steps of:

dispersing 100 parts by weight of non-crosslinked
linear low-density polyethylene-based resin beads, 30 to 300
parts by weight of a styrene-based monomer, and 0.1 to 0.9
10 parts by weight of a polymerization initiator relative to 100
parts by weight of the styrene-based monomer into a
suspension containing a dispersant;

impregnating the styrene-based monomer into the
low-density polyethylene-based resin beads by heating a
15 resultant dispersion at such a temperature that polymerization
of the styrene-based monomer does not substantially take
place;

performing a first polymerization of the styrene-based
monomer at a temperature of $(T-15)$ to $(T-8)$ °C or $(T+1)$ to
20 $(T+5)$ °C (where T °C is a melting point of the low-density
polyethylene-based resin beads);

adding a styrene-based monomer and 0.1 to 0.9 parts
by weight of a polymerization initiator relative to 100 parts by
weight of the styrene-based monomer when a conversion ratio
25 of polymerization reaches to 80 to 99.9%, and performing

impregnation of the styrene-based monomer into the low-density polyethylene-based resin beads and a second polymerization of the styrene-based monomer at a temperature of (T-15) to (T-8) °C or (T+1) to (T+5) °C (where T °C is a melting point of the polyethylene-based resin beads) (wherein a total amount of the styrene monomers used in the first and second polymerizations is more than 50 parts by weight and not more than 1000 parts by weight relative to 100 parts by weight of the low-density polyethylene-based resin beads); and

impregnating a volatile blowing agent into the resin beads during or after the polymerization,

whereby resin components of the expandable beads contain a gel component comprising less than 2 wt% of a graft polymer.

4. A method for producing expandable beads of a styrene-modified linear low-density polyethylene-based resin according to Claim 1, wherein the low-density polyethylene-based resin beads each have a substantially spherical shape or a cylindrical shape having an L/D (where L is a length of each bead and D is a diameter of each bead) of 0.6 to 1.6, and an average bead size of 0.2 to 1.5 mm.

5. Expandable beads of a styrene-modified linear low-density polyethylene-based resin comprising a volatile blowing agent and a base resin, the base resin containing more than 50 to 1000 parts by weight of a polystyrene-based resin

- component relative to 100 parts by weight of a non-crosslinked linear low-density polyethylene-based resin component, wherein the base resin contains less than 2 wt% of a gel component comprising a graft polymer of the polystyrene-based resin component and the low-density polyethylene-based resin component.
- 5 6. Expandable beads of a styrene-modified linear low-density polyethylene-based resin obtained by the method of Claim 1.
- 10 7. Expandable beads of a styrene-modified linear low-density polyethylene-based resin obtained by the method of Claim 2.
8. Expandable beads of a styrene-modified linear low-density polyethylene-based resin obtained by the method of Claim 3.
- 15 9. Pre-expanded beads having a bulk density of 20 to 200 kg/m³, obtained by pre-expanding the expandable beads of the styrene-modified linear low-density polyethylene-based resin of any one of Claims 5-8.
- 20 10. An expanded molded article having a density of 20 to 200 kg/m³, obtained by expansion molding of the pre-expanded beads of Claim 9.